

HIGH TEMPERATURE GELLING AGENT FOR OIL AND GAS APPLICATIONS



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PRODUCT BACKGROUND

- Utilization of viscous fluid in a wellbore have been a common practice to enhance oil and gas hydrocarbons production.
- The viscous fluids are usually produced by hydrating common gelling agent such as hydroxyethyl cellulose, guar gum and xanthan gum in water or aqueous solution.
- As the oil exploration shifted towards higher-temperature reservoir, the common gelling agents are no longer usable because of degradation upon exposed to high temperature.
- To overcome this problem, UMP in collaboration with Neu Solutions Sdn Bhd have produced high-temperature gelling agent (HT-GA)
- HT-GA price is 75% cheaper compared to high temperature gelling agent available in the market

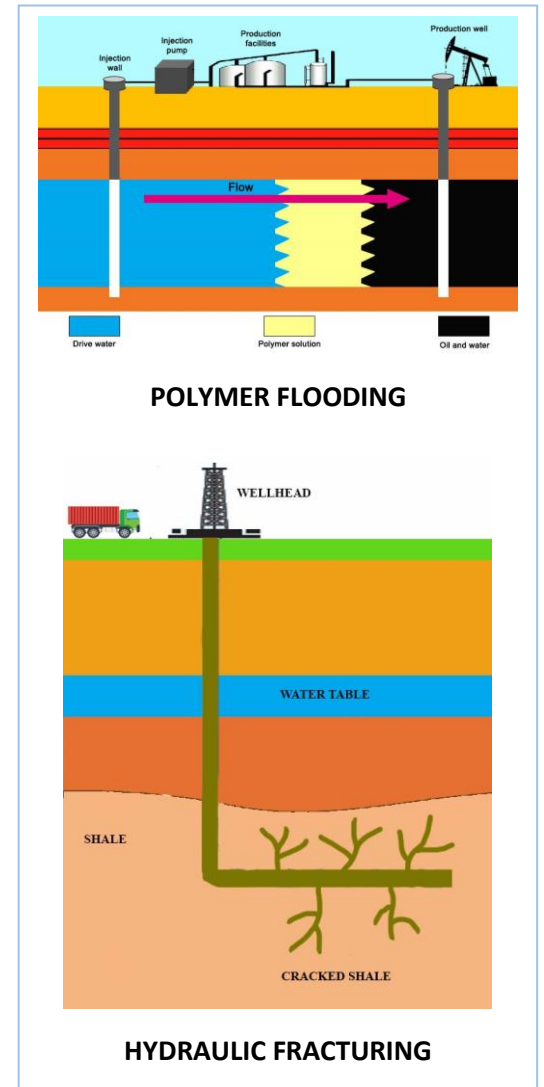
BENEFITS AND APPLICATIONS

BENEFITS

- Produced from natural sources polymer, environmentally friendly.
- Thermal stability up to 350°F.
- High viscosity at low polymer loading.
- Excellent suspension capabilities
- Easily mixed in freshwater, seawater or monovalent brines.

APPLICATIONS

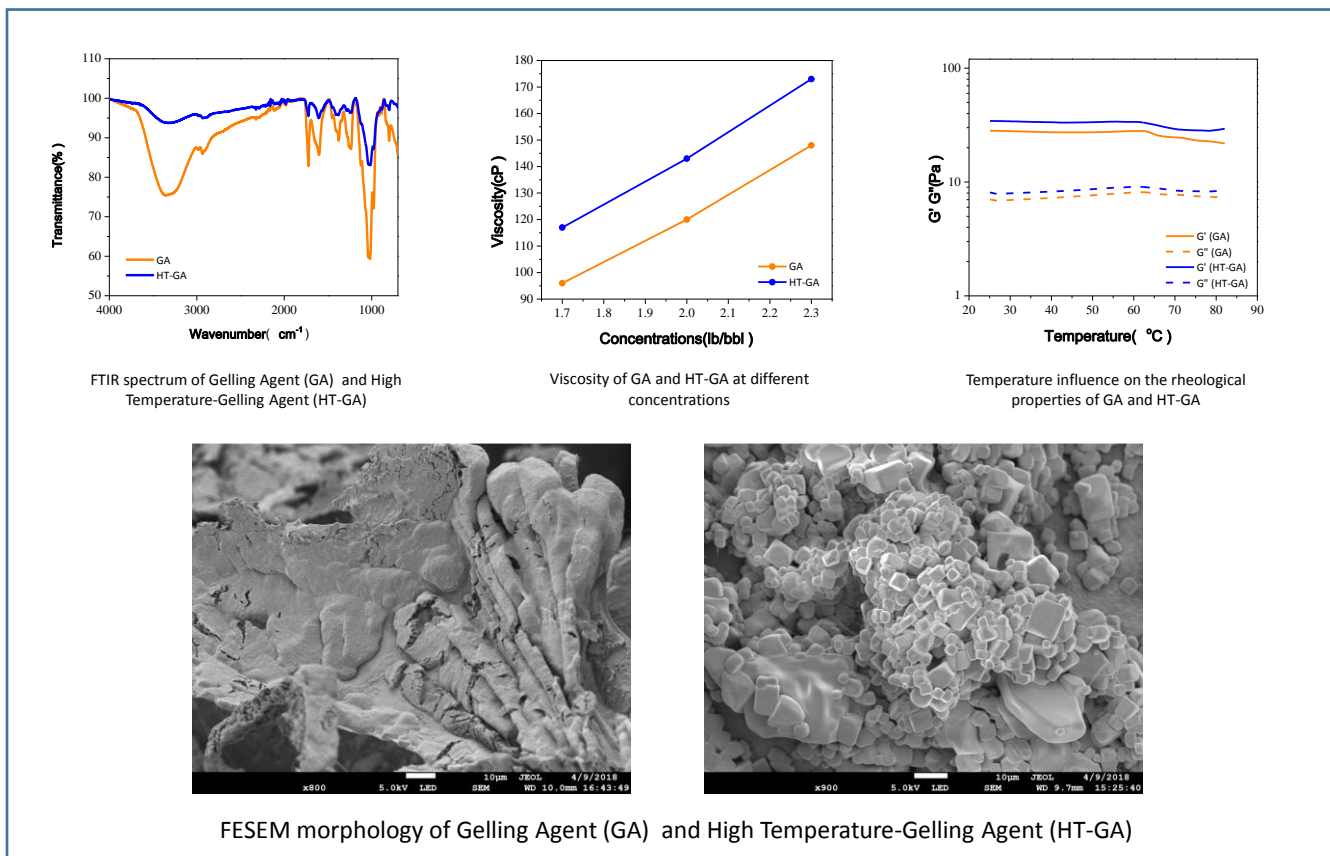
- Polymer flooding for enhance oil recovery (EOR)
- Hydraulic fracturing
- Wellbore cleanout operation



PRODUCTION PROCESS



PRODUCT CHARACTERISTICS



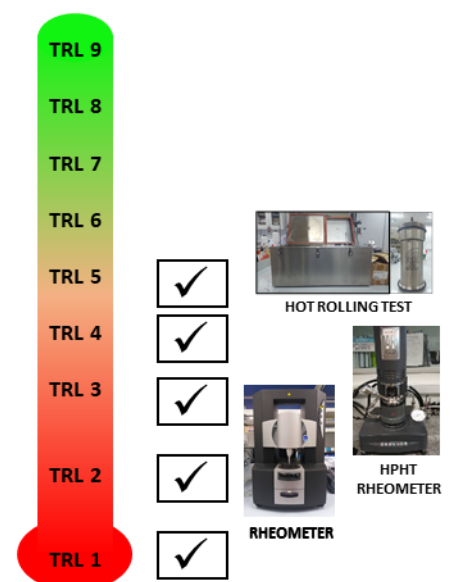
MARKETABILITY & PRICE ESTIMATION

- Global gelling agent market is expected to grow significantly from USD 9.79B in 2016, to USD 13.91B in 2023.

Formulation	Temperature (F)	Field Conc (lb/bbl)	Est. cost per bbl (RM)
Commercial	325	1.7	340.00
HT-GA	325	1.7	90.00
GA	270	1.7	80.00
Xanthan	250	2.5	35.00
HEC	200	2.5	35.00

TECHNOLOGY READINESS LEVELS (TRLs)

- TRL 9:** Actual Technology system qualified through successful mission operations.
- TRL 8:** Actual Technology system completed and qualified through test and demonstration.
- TRL 7:** Prototype demonstration in an operational environment.
- TRL 6:** Prototype demonstration in relevant environment.
- TRL 5:** Basic technology subsystem validation in a relevant environment.
- TRL 4:** Basic technology subsystem validation in a laboratory environment.
- TRL 3:** Analytical and experimental critical function and/or characteristic proof-of-concept.
- TRL 2:** Technology concept and/or application formulated.
- TRL 1:** Basic principles observed and reported.



PATENT

PATENT FILLING STATUS: In progress

AWARDS

- GOLD MEDAL, CREATION, INNOVATION, TECHNOLOGY & RESEARCH EXPOSITION, 2018, UMP**
- SPECIAL AWARD "BEST INVENTIONS IN FLUIDS AWARD". CREATION, INNOVATION, TECHNOLOGY & RESEARCH EXPOSITION 2018 (CITREX)**

COLLABORATOR

- PROJECT GRANT:
- UIC170704
 - RDU170237

